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Are 'true' preferences revealed in repeated markets? An experimental demonstration of context-dependent valuations

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Abstract This paper reports a new and significant experimental demonstration that market participants adjust their bids towards the price observed in previous market periods when—by design—individuals' values should not be affiliated with the market price. This demonstration implies that market prices may not adjust as standard comparative statics predicts and emphasizes the significance of social aspects even in market contexts. Hence, the present study shows that market behaviour is not anomaly-free. Indeed, market behaviour does not reveal the underlying *true* preferences but rather *context-dependent* preferences.

Keywords Auctions · Valuations · Economic principles · Anomalies · Experiments · Social interactions

JEL Classification C92 · D01 · D44

1 Introduction

In recent decades, experimental evidence has accumulated that individual behaviour sharply contrasts with standard economic theory and its underlying theory of preference (see Camerer 1995; Starmer 2000). This evidence of anomalous behaviour has

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weakened the positive value of several economic models. It has also drawn increasing academic attention and is enlivening an interdisciplinary scientific debate not least because of its implications for welfare economics and policy-making (e.g., Bernheim and Rangel 2007; Camerer et al. 2003; Thaler and Sunstein 2003; Glaeser 2006). Simultaneously, however, several empirical demonstrations have shown that repeated market trials can lead to anomaly-free outcomes under a number of lab and field conditions (e.g., List 2003). In contrast, a few experimental studies (Knetsch et al. 2001; Loomes et al. 2003) have found that market participants adjust their bids towards the price observed in previous market periods when—by design—individuals' values should not be affiliated with the market price. Those studies show that market behaviour does not reveal the underlying *true* preferences but rather *context-dependent* preferences. Still, those findings are not definitive and the evidence so far is rather weak.[1] But, because the theoretical implications of an anomalous price affiliation are potentially profound and far-reaching, it is important to clarify whether this price affiliation is real and significant.

This paper contributes to this ongoing research by generating new data and reporting a novel and significant experimental demonstration that the bids and, consequently, the revealed preferences of market participants are context-dependent since the bids are biased toward the market price previously observed.[2] This demonstration relies fundamentally on a statistical test based on the analysis of bids' variances within and between markets.

The structure of the paper is as follows. In Sect. 2, following the paths traced by Plott (1996) and by Loomes et al. (2003), two alternative hypotheses of individual behaviour in repeated markets are presented. In Sect. 3, the experimental design is introduced, while in Sect. 4 the implementation of the experiment is described. In Sect. 5, the analysis of the results and the related econometrics are given. In Sect. 6, a few concluding remarks are provided.

2 Discovered preference and shaping hypotheses

The first of the two alternative hypotheses under consideration has been advanced as an observational theory in the 'discovered preference hypothesis' by Plott (1996). This hypothesis suggests that 'attitude[s] like expectations, beliefs, risk-aversion and the like, are *discovered* as are other elements of the environment'. Indeed, Plott adds that individuals 'acquire an understanding of what they want through a process of reflection and practice' (Plott 1996, p. 227). This hypothesis catches the intuition that individuals who already have well-defined preferences might also exploit the market mechanism to discover their true preferences by trial and error. Hence, if preferences satisfy standard theoretical requirements, the discovered preference hypothesis would imply that anomalies are the results of individuals' errors, which will be reduced by

[1] For instance, in a recent experimental investigation, Braga et al. (2009) did not find any significant evidence of anomalous price affiliation.

[2] In so doing, this paper contributes also to the literature on homegrown value experimental auctions (e.g., Lusk and Shogren 2007).

market experience. According to this hypothesis, only later market trials should reveal the true preferences of subjects. Moreover, if this hypothesis is valid then subjects' errors may be either symmetric or asymmetric.

To understand the implications of the discovered preference hypothesis for the present experimental context, suppose that there are several markets for an unfamiliar good that are run for some periods with random assigned participants. Moreover, assume that in those markets (i) individuals' values are not correlated and (ii) there is no possibility to buy back auctioned goods. In such a context, if there are symmetric errors affecting individual bids, the mean of bids within a market is unaffected. On the other hand, if errors are asymmetric (e.g., a tendency to overask in selling auctions), the mean of bids does shift. However, in this latter case, if several markets involving different participants are compared then the relation among the means of bids remains unchanged. Note that these considerations hold even after the discovery of subjects' true preferences and its consequent reduction of errors. Thus, assuming that market participants are randomly assigned, the discovered preference hypothesis implies an equality of mean bids among markets and across periods. Furthermore, within markets, the effects of an error reduction on the variances of subjects' bids depend upon the specific pattern of erroneous behaviour. For instance, a decrease in the variances within markets might be consistent with the discovered preference hypothesis in the case of symmetric errors. Therefore, according to the discovered preference hypothesis, the variances within markets might vary in any direction whereas those between markets should not increase as a consequence of the implied equality of means across markets and periods.

The second hypothesis under consideration is the 'shaping hypothesis' as formulated by Loomes et al. (2003). This hypothesis captures the idea that once individuals have ex-ante vague preferences then they would refer to the market price to completely define their preferences. The shaping hypothesis states that market participants adjust their bids towards the price observed in previous market periods when—by design—individuals' values should not be affiliated with the market price. To comprehend the implications of the shaping hypothesis for the present experiment, consider the aforementioned market context. If period by period the bids converge towards the market price, then shaping is at work.[3] Accordingly, shaping implies a path dependency of the market bids, leading to market-specific patterns. Thus, assuming a participant random assignment, in the initial period shaping implies an equality of the means of bids between markets, although it may lead to a difference in the means of bids between markets in later periods. Similarly, period after period, shaping leads to a reduction of the bids' variance within markets as well as to a possible increase of the bids' variance between markets.

[3] In other contexts, however, evidence of convergence of bids toward the market price may be rational and, therefore, explained by factors other than shaping. For instance, consider two different market contexts: in the first, an individual is trying to speculate by selling a certain good with the intention of buying it back later on; in the second, another individual is uncertain about the utility to be gained from the consumption of a certain good and he believes that his utility is correlated with the utilities of other participants. Then, in both contexts, an observed price can be significant for individuals' values by providing information about others' willingness to accept. Those and similar contexts are not the object of the present experimental study.

An unsophisticated form of the shaping hypothesis would be the partial adjustment model $b_{i,t} = b_{i,t-1} + \theta(p_{i,t-1} - b_{i,t-1})$, where $0 \leq \theta \leq 1$, $b_{i,t}$ represents the bid of individual i in period t and $p_{i,t-1}$ indicates the price observed by individual i in the period $t-1$, respectively.

In synthesis, the implications of the two hypotheses to be submitted to formal tests can be restated as follows. First, both hypotheses imply an equality of mean bids between markets in the initial period as the result of random assignment. Second, the shaping hypothesis does not imply an equality of mean bids between markets in later periods, while the discovered preference hypothesis does. Third, according to the shaping hypothesis, the variances between markets may increase, whereas those within markets should decrease; by contrast, according to the discovered preference hypothesis, the variances between markets should not increase whereas those within markets may vary in either direction.

3 Experimental design

Subjects took part in a series of six market periods for an unpleasant tasting liquid (a mixture composed in equal parts of vinegar and Lucozade). The choice of this mixture was made for several reasons. Firstly, it was necessary for the experimental purpose to use an unfamiliar 'good' such that subjects could not rely for their valuations on real market prices. Moreover, because this was a private-value good there were no reason to expect a correlation of values across subjects. Secondly, it was a harmless drink that permitted consumption on the spot, making re-sale impossible. Thirdly, given the intrinsic characteristics of this mixture, it was possible to use only small quantities, minimizing the possibility that subjects would become saturated and start to move significantly up their offer curves.[4] Finally, a similar mixture (vinegar and Gatorade) was adopted by Ariely et al. (2003) thereby providing a safely tested tool for the experiment. The present design avoids the three problems identified by Harrison et al. (2004) relative to value elicitation: (i) field-price censoring is not an issue since there is no immediate substitute to the chosen laboratory commodity; (ii) beliefs about prices should not be affiliated provided that it is irrational (in standard economic terms) for a subject to hold beliefs responsive to the beliefs of other subjects (see footnote 3); (iii) beliefs about the quality of the laboratory commodity should not be affiliated given that there is no uncertainty about the characteristics of the commodity (see Sect. 4). Moreover, the experiment provided an instant consumption experience of the unpleasant liquid also to assist the discovery of preferences by offering an immediate occasion of 'practice and reflection' (Plott 1996, p. 227).

What was being offered in this experimental market was a payment of money in return for drinking 60 ml of this mixture. Each market was composed of five ($n = 5$) or seven ($n = 7$) randomly assigned participants.[5] There were six market periods in

[4] An *ex-post* fixed-effect regression of the bid of individual i in period t (i.e., $b_{i,t}$) on the bid of individual i in period $t-1$ (i.e., $b_{i,t-1}$) results in an estimation of β_1 equal to 0.636 (Std. Err. = 0.080; Prob $> |t| = 0.000$), after conditioning on $b_{i,t-1}$ being 'winning'. Thus, the experimental data do not present any significant evidence of upward movements of the offer curves (due to a diminution of marginal utility) of those individuals who 'traded' in the previous period.

[5] The mix of 5 and 7 in the composition of the markets was used to cope with 'no-show' participants.

each market and they were all binding.[6] The first market period in the series of six will be referred to as Period 1, the second one as Period 2 and so on through Period 6. The market price was set according to the median auction mechanism, which is a particular case of a Vickrey auction. Subjects' bids were obtained through forms with several questions on a range of prices. Note that the label 'bid' stands for the highest price at which participants were *not* willing to trade. Thus, all participants stated their bids, market by market, expressing their willingness-to-accept money for drinking the unpleasant tasting liquid. After ranking subjects' bids, the middle value of these bids was set as the market price. All subjects in the auction with bids lower than the market price 'traded'; that is, they were asked to drink 60 ml of the unpleasant tasting liquid and received in exchange the market price as payment in cash at the end of the experiment. In this experiment, therefore, the price approximately reflects the bid of the median participant. Before running the first market period, subjects were asked to drink a 30 ml sample of the mixture. However, there was only one auctioned quantity of 60 ml.

The experiment was designed to generate new data in order to allow for a test of the discovered preference hypothesis versus the shaping hypothesis based on the analysis of bids' variances within and between markets. To enhance the possibility that statistical tests could reveal shaping effects if at work, experimental markets were set up that was likely to provide genuine systematic differences in price feedbacks across treatments. To this end, building upon Ariely et al.'s (2003) Experiment 4, participants were assigned to two different treatments and exposed to a given anchor—i.e., 'a salient but uninformative number presented to subjects before they make a numeric judgment' (Chapman and Johnson 2002, p. 121)—to manipulate indirectly their initial valuations and, consequently, their bids.[7] Note that subjects were exposed to the anchor through a simple question immediately after they tasted the mixture: 'Would you be willing to repeat the same experience for a payment of £ 0.05 (or, alternatively, £ 0.25 or £ 1.25)?'. Hence, the anchors were equal to £ 0.05 (low anchor), to £ 0.25 (medium anchor) and to £ 1.25 (high anchor). There were two treatments. In T1, the participant majority in a market (i.e., $(n + 1)/2$) was exposed to the low anchor whereas the minority (i.e., $(n - 1)/2$) to the medium anchor; conversely, in T2, the majority was exposed to the high anchor whereas the minority to the medium anchor. Consequently, through the median auction mechanism, the price feedback in the two treatments had to be different if market bids exhibit anchoring effects by being biased toward the given anchor. Indeed, the median auction mechanism sets the middle value of the bids as market price. If anchoring was at work, the market price had to be biased toward the low (high) anchor in T1 (T2) because the subject with the middle value was only exposed to the low (high) anchor as the majority in his market. Therefore, price feedbacks had to be lower in T1 than in T2. If there were also shaping effects at work, then in T1 the bids of the minority exposed to the medium

[6] This was necessary given that testing for the discovered preference hypothesis 'involves exploring how bidding behavior changes with market experience' (Shogren 2006, p. 166).

[7] In Ariely et al.'s (2003) experiment, all participants in a market were exposed to the same anchor, whereas in the present study the market participant majority and minority were exposed to two different anchors. In other words, in a given market, Ariely et al. implemented homogeneous anchors between subjects, while the present study uses heterogeneous anchors.

anchor would have been shaped, period after period, in the opposite direction with respect to the bids of the parallel minority in T2. Consequently, in case of anchoring, by indirectly controlling market feedbacks, this experimental set up should make it simpler to test for shaping against the discovered preference hypothesis through an analysis of minority bid variances within and between treatments.

However, this manipulation had no significant effect and, therefore, the two treatments can be regarded as a unique treatment with 32 markets (see Appendix). Hence, the eventual experimental environment resulted in a more complex context in which to test for shaping. Thus, a possible finding supporting the shaping hypothesis would result in more robust evidence of shaping.

4 Implementation of the experiment

Two hundred subjects took part in the experiment at the University of East Anglia (UEA) in Norwich (UK). Participants were subjects drawn from the entire population of UEA students and were recruited via e-mail (approximately two-thirds were postgraduate students and the rest were undergraduate students); the subject pool was divided almost evenly between men and women. The experiment lasted on average 45 minutes and was paper-based. All subjects were paid £ 3.00 in cash as a participation fee, plus earnings from the experiment as explained above. Thus, the mean of total payments was £ 5.56 (Std. Deviation of £ 2.62) with a minimum of £ 3.00 and maximum of £ 16.60. In each session two markets were run at the same time but in different rooms. Before being randomly assigned to a certain room, all subjects were informed that in order to understand what the experiment entailed they would have had to drink a 30 ml sample of mixture composed of equal parts of vinegar and Lucozade. At the same time, this mixture was shown to each subject together with bottles of vinegar and Lucozade as those used in the experiment. In this way all participants were made fully aware of the unpleasant experience of drinking the mixture. Only subjects who expressed their willingness to drink a sample were allowed to participate in the experiment. Moreover, while subjects were receiving instructions, it was highlighted that they would not be required to drink any more than that sample; if they drank any more it was only because they chose to do so, and they would be paid for this. At this stage, subjects were randomly assigned to each room (or market) and then allocated a desk. On entering the room, each participant found on her desk a booklet that provided the experimental instructions and market forms.[8] Participants were then instructed about the experimental procedures by experimenters who read the instructions as printed in the booklets and guided all participants through the experiment step-by-step. During the instruction phase, subjects were shown an illustration of the form they would have to fill in while taking part in the market. Each form had a series of thirty binary-choice questions as exemplified in Table 1.

The actual value of 'x' was, of course, different across binary-choice questions. Its range went from £ 0.01 up to £ 3.00 with a geometric-like progression up to a maximum step of £ 0.20. Participants were informed about the three possible ways to

[8] All experimental material is available on the journal website as a supplement to this paper.

Table 1 A generic example of a binary-choice question

	Accept to trade	Reject to trade
If the market price is £ 'x'	□	□

consistently complete the form also by visual examples. It was emphasized that they had to answer in one of these ways or the experimenters would ask them to change their answers. There was, however, little evidence of misunderstanding: in fact, only about 6% of the subjects needed to review their own form in the first market, and none of them did so later. In addition, the instructions stressed that the market price was always the price at which the person with the middle valuation was not willing to trade and that no one could manipulate the price to her own advantage.

After all subjects were given instructions, the main part of the experiment started. At this stage, all participants were asked to drink the 30 ml sample of the liquid. Then, Period 1 started. Subjects were asked to answer all thirty questions and reported their highest rejected price at the bottom of the market form.[9] Once they did so, all 'highest rejected prices' were collected by experimenters and ranked on the blackboard, from the lowest to the highest. The experimenters then picked the middle value which was set as the market price. Hence, each subject who traded in the auction was to immediately drink 60 ml of the liquid. Subsequent market periods were implemented in an analogous fashion until Period 6. Then, the respective earnings were calculated and paid to subjects who left the experiment. All mixtures served to subjects were prepared by experimenters in full view of participants by using graduated cylinders and funnels observing the highest standards of hygiene.

5 Data analysis

Both the shaping and the discovered preference hypotheses imply the equality of market means in Period 1 as an obvious result of a correct randomisation of subjects.[10] However, the shaping hypothesis might lead to differences in means of bids among markets in Period 6 as evidence of market-specific patterns. Conversely, the discovered preference hypothesis implies the equality of means of bids among markets also in Period 6 (see Sect. 2).

A test for equality of means between markets in Period 1 shows that there is no statistically significant difference among means of bids in Period 1 ($F(31, 168) = 1.114$; $p = 0.324$), which confirms a correct randomization. By contrast, an analogous test for Period 6 displays a statistically significant difference among the means of bids in Period 6 ($F(31, 168) = 7.093$; $p = 0.000$). Moreover, note that from Period 1 to Period 6 both the sum of squares between markets and those within markets vary but in

[9] The only exception to this procedure was when a subject, who accepted to trade for every price, was required to tick the box 'Accept all' at the bottom of the market form.

[10] In fact, a correct randomization implies that the assignment to a given market of individuals with certain preferences or tastes can be equally probable. Therefore, on average, there should be the same distribution of tastes and, consequently, of bids across markets.

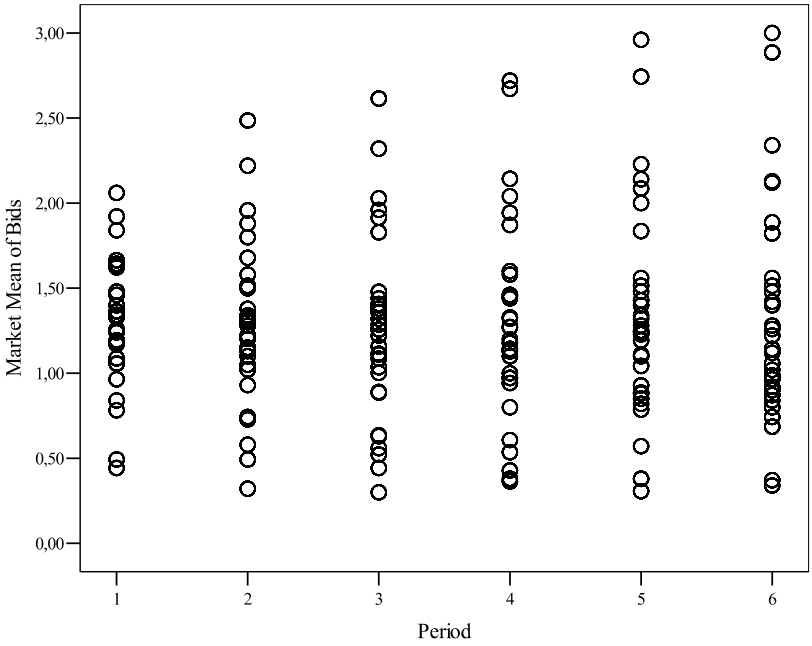

Fig. 1 Comparing market means of bids across periods

opposite directions. Specifically, the sum of squares between markets increases (from 26.260 in Period 1 to 78.338 in Period 6), whereas that within markets decreases (from 127.751 in Period 1 to 59.851 Period 6). In other words, the total variation explained by the variation between markets passes from an $R^2 = 0.171$ in Period 1 to an $R^2 = 0.567$ in Period 6. Thus, there is strong evidence supporting the shaping hypothesis.

In Fig. 1, the market means of bids with data from Periods 1 to 6 are plotted; that is, each point of the set scattered in Fig. 1 represents the mean of bids for a given market in Period 1, in Period 2, and so on through Period 6. Of course, if two means are identical, only one marker is displayed; alternatively, if two means differ only a little, two markers with some overlap are shown. Hence, Fig. 1 clearly reports an increase of the variance of market means across periods. This is a qualitative indication of market-specific patterns and, consequently, of shaping.

These findings demonstrate shaping effects in detail by highlighting the convergence of bids in each market around its individual mean as evidence of a market-specific pattern.[11]

[11] After demonstrating the existence of anchoring effects in the first market period of Experiment 4, Ariely et al. (2003) also report a reduction of within-market variance of bids and show a steady divergence of mean bids of participants exposed to different anchors. Given the present evidence and that no control for shaping was implemented, it is not possible to exclude that the absence of a reduction (or even a strengthening) of anchoring effects across market periods may be due to shaping rather than anchoring itself.

Table 2 Fixed-effects estimation of the partial adjustment model

Dependent variable: $(b_{i,t} - b_{i,t-1})$		
Independent variables		
$(p_{i,t-1} - b_{i,t-1})$	0.771^{***}	(0.032)
Constant	0.073^{***}	(0.013)
# Observations	1000	
R-squared	0.415	

***Indicates statistically significance at the 1% level

As a further test of the shaping effect it is useful to estimate econometrically the partial adjustment model introduced in Sect. 2. Note that the data collected is a sample of 200 subjects, whose behaviour is observed in six different periods. Therefore, the panel data consist in a total of 1200 observations and is balanced: firstly, a 'pooled OLS' estimation was implemented; secondly, a fixed-effects regression was run; finally, a random-effects model was estimated. A test of joint restrictions such that all individual intercepts are equal to zero unsurprisingly indicates that the F test offers strong evidence against the pooled model and in support of the fixed-effects model ($F(199, 799) = 2.29$; Prob $> F = 0.000$). Furthermore, the results of the Hausman test ($H = 307.34$; Prob $> \chi^2 = 0.000$) demonstrate that the fixed-effects model should be used, provided that the random-effects model is biased.

Table 2 reports the fixed-effect estimation of the partial adjustment model after a trivial algebraic step. As shown, the coefficient $\theta = 0.771$ (Std. Err. $= 0.032$) is strongly significant ($t = 23.82$; $p = 0.000$) and has the correct sign. Furthermore, θ is larger than zero but lower than one as required by the present specification of the partial adjustment model. In this instance, the hypothesis of no explanatory power is significantly rejected ($F(1, 799) = 567.34$; Prob $> F = 0.000$). Indeed, the proportion of variation in the dependent variable explained by the explanatory variable in the model is equal to 41.5% ($R^2 = 0.415$).

These econometric results are consistent with shaping though, *in principle*, for some specifications of the stochastic error, they are also compatible with the discovered preference hypothesis. However, the statistical analysis discussed above ruled out this possibility *de facto*. In addition, these results are also robust to alternative specifications that include either period or market fixed effects.

As a further check of the inference that is possible to draw from the econometric analysis, Table 3 reports the fixed-effect estimation of the following alternative adjustment model: $b_{i,t} = \beta_0 + \beta_1 b_{i,t-1} + \beta_2 (p_{i,t-1} \cdot b_{i,t-1})$, where β_0, β_1, and β_2 are the model coefficients, $b_{i,t}$ represents the bid of individual i in period t and $p_{i,t-1}$ indicates the price observed by individual i in the period $t-1$, respectively.[12] A comparison between the relative magnitude of β_1 and β_2 confirms the key role played by $p_{i,t-1}$ in the individual adjustment dynamics.

Taken with the evidence provided in Tables 2 and 3, the shaping hypothesis has found further support.

[12]The fixed-effects model should be used, provided that there is strong evidence against the pooled model ($F(199, 798) = 3.37$; Prob $> F = 0.000$) and the random-effects model is biased ($H = 557.44$; Prob $> \chi^2 = 0.000$).

Table 3 Fixed-effects estimation of an alternative adjustment model

Dependent variable: $b_{i,t}$		
Independent variables		
$b_{i,t-1}$	0.024	(0.050)
$(p_{i,t-1} \cdot b_{i,t-1})$	0.112***	(0.025)
Constant	1.050***	(0.041)
# Observations	1000	
R-squared	0.071	

***Indicates statistically significance at the 1% level

6 Conclusion

In the context of repeated markets, empirical evidence shows that in several cases individual choices approach the predictions of standard economic theory. In other cases, however, contrasting evidence attests that individual choices in repeated markets often diverge from the theory's predictions by exhibiting several anomalies. In these cases, the preferences revealed by individuals' choices do not reflect their 'true' preferences. The present experimental study provides insights into the relationship between revealed preferences and anomalies in the context of repeated markets.

The experiment and the related tests were implemented to discriminate between discovered preference and shaping hypotheses as underlying causes of market dynamics in a particular case of a Vickrey auction, namely the median price auction.

To enhance the possibility of such discrimination, an anchor manipulation was caught out. However, consistently with standard economic theory, anchoring effects were found not to be significant (see Appendix for further discussions).

More importantly, strong evidence was still obtained that is consistent with the shaping hypothesis and incompatible with the discovered preference hypothesis. This strong support for shaping calls for a rigorous reconsideration of the several demonstrations of erosion of anomalies realized in an experimental setting without controlling for shaping effects. It also questions the idea that in general repeated markets reveal anomaly-free preferences. Indeed, if shaping effects are at work, then market participation affects values which are biased towards market prices. This implies that market prices may not adjust to exogenous shocks, changes in parameter values, etc., as standard comparative statics predicts. Moreover, the relevance of market participation emphasizes the significance of social aspects even in market contexts and makes it possible to draw connections between the present contribution and studies of social heuristics (e.g., Marsh 2002; Todd et al. 2008), conformism (e.g., Goeree and Yariv 2007) and social interactions (e.g., Durlauf 2004; Cooper and Rege 2008) that might lead to promising avenues for future research.

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Appendix: Anchoring effects

To test for anchoring effects only data from Period 1 can be used, since these are not affected by market forces and therefore could present the pure anchoring pattern. Figure 2 summarises the distributions of bids in Period 1 in four box-plots according to the pair treatment-anchor. Each box shows the (first and third) quartiles and the median, whereas each diamond represents the respective mean of bids.

Recall that if anchoring matters, subjects' bids should vary with the anchor: the higher is the anchor the higher is the population of potential means of subjects' bids. At first glance, the means plotted in Fig. 2 appear very similar to each other. In fact, the means of bids in Period 1 across treatments and anchors are not significantly different from each other as demonstrated by appropriate t-tests with all p-values larger than 0.20.

Note that up to Period 1, the only relevant difference with respect to Ariely et al.'s (2003) experimental design was the value elicitation method. Specifically, binary-choice questions were utilized rather than the open-ended ones used by Ariely et al. (2003). Thus, there is good reason to think that the discrepancies between the results are due to differences in elicitation methods.

A possible explanation for these findings is that anchoring effects occur when the response mode is in the same dimension as the anchor such that the anchor is salient as a possible response. Ariely et al. adopted an anchor which consisted of a sum of money. In an open-ended task, the response mode is to state a sum of money and therefore the adopted anchor may be more salient. In contrast, in a binary-choice

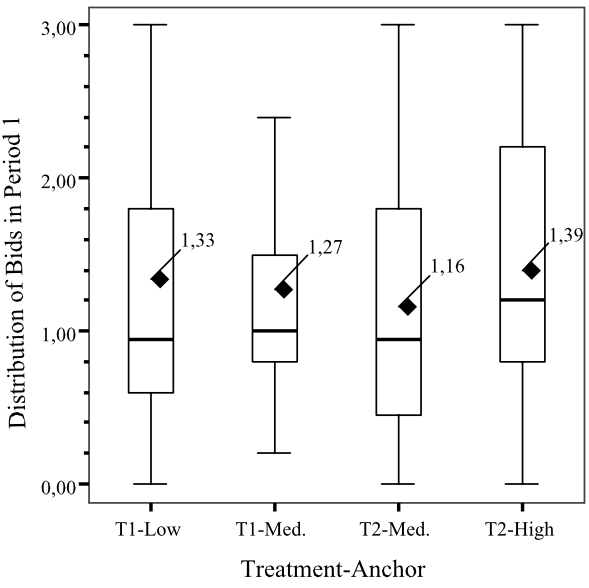

Fig. 2 Subjects' bids in Period 1

task as in the present experiment, the subject can interpret it as a series of choices, each requiring an accept/reject response. Since accept/reject is not in the same dimension as the anchor, the latter may be less salient. In other words, these findings are consistent with the 'compatibility hypothesis' which states that 'the weight of a stimulus attribute is enhanced by its compatibility with the response' (Slovic et al. 2002, p. 217).

Hence, these findings are broadly consistent with standard economic theory. The implication may be that anchoring effects are not robust across elicitation procedures, and thus are less worrying for economists than they appeared to be at first. It seems that anchoring may be specific to open-ended WTA questions, which have far fewer analogues in real markets where, for instance, consumers often respond to given prices. Indeed, in actual market contexts consumers usually face a menu of prices and have to make a single decision on whether to trade or not to trade at each given price. That is, they have to solve choice rather than valuation tasks. However, further research is needed to give a more definitive account of this matter.

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